IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re the Application of

Hans Heinrich SCHMUTSCH

Serial No.: To be assigned (National Phase of PCT/EP2004/010769 filed September 23, 2004)

Filed: April 22, 2005

For: RETAINING ELEMENT FOR BUILDING SHEETS

CLAIM FOR PRIORITY

Mail Stop Patents
Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Sir:

The benefit of the filing date of the following prior foreign applications filed in the following foreign country is hereby requested for the above-identified application and the priority provided in 35 USC 119 is hereby claimed:

European Appln. No. 03078078.7, Filed October 2, 2003
European Appln. No. 04076371.6, Filed May 7, 2004.

The certified copies were submitted during the International Phase of prosecution.

Please note, the concurrently filed Inventor's Declaration contains inadvertent typographical errors because it claims priority from European Appln. No. 03078078.8, filed October 2, 2003 and European Appln. No. 04076371.7, filed May 7, 2004. The numbers after the respective decimal points are incorrect. In contrast, the present Claim for Priority, the concurrently filed Application Data Sheet, and the Request Form filed with the International Stage of the present application list the correct priority application numbers.

Also, for a European Patent application, the serial number without the number after the decimal point provides a unique identifier sufficient to identify the European patent application.

It is requested that the file of this application be marked to indicate that the requirements of 35 USC 119 have been fulfilled and that the Patent and Trademark Office kindly acknowledge receipt of this document.

Respectfully submitted,

Date: April 22, 2005

By: Anthony P. Venturino

Anthony P. Venturino
Registration No. 31,674

APV/pgw
ATTORNEY DOCKET NO. APV31860

STEVENS, DAVIS, MILLER & MOSHER, L.L.P.
1615 L Street, N.W., Suite 850
Washington, D.C. 20036
Tel: 202-785-0100 / Fax. 202-785-0200

Europäisches Patentamt
European Patent Office
Office européen des brevets

Bescheinigung Certificate Attestation

Die angehefteten Unterlagen stimmen mit der ursprünglich eingereichten Fassung der auf dem nächsten Blatt bezeichneten europäischen Patentanmeldung überein.

The attached documents are exact copies of the European patent application described on the following page, as originally filed.

Les documents fixés à cette attestation sont conformes à la version initialement déposée de la demande de brevet européen spécifiée à la page suivante.

Patentanmeldung Nr. Patent application No. Demande de brevet n°

03078078.7

PRIORITY DOCUMENT
SUBMITTED OR TRANSMITTED IN COMPLIANCE WITH RULE 17.1(a) OR (b)

Der Präsident des Europäischen Patentamts;
Im Auftrag

For the President of the European Patent Office

Le Président de l'Office européen des brevets
p.o.

R C van Dijk

Anmeldung Nr:
Application no.: 03078078.7
Demande no:

Anmeldetag:
Date of filing: 02.10.03
Date de dépôt:

Anmelder/Applicant(s)/Demandeur(s):

Corus Bausysteme GmbH
August-Horch-Strasse 20-22
56070 Koblenz
ALLEMAGNE

Bezeichnung der Erfindung/Title of the invention/Titre de l'invention:
(Falls die Bezeichnung der Erfindung nicht angegeben ist, siehe Beschreibung.
If no title is shown please refer to the description.
Si aucun titre n'est indiqué se referer à la description.)

Retaining element

In Anspruch genommene Priorität(en) / Priority(ies) claimed /Priorité(s) revendiquée(s)
Staat/Tag/Aktenzeichen/State/Date/File no./Pays/Date/Numéro de dépôt:

Internationale Patentklassifikation/International Patent Classification/
Classification internationale des brevets:

E04D3/36

Am Anmeldetag benannte Vertragstaaten/Contracting states designated at date of filing/Etats contractants désignées lors du dépôt:

AT BE BG CH CY CZ DE DK EE ES FI FR GB GR HU IE IT LU MC NL
PT RO SE SI SK TR LI

RETAINING ELEMENT

The present invention relates to an elongate retaining element for building sheets having as seen in cross section perpendicular to its direction of elongation, a head part for engaging at least one building sheet.

Such an elongate retaining element is known from GB 2167101 A, which discloses a retaining element having a head part and a base part connected by a connecting flange. The head part engages with the free end of at least one building sheet, which is at least partially curved over the head part of the retaining element. The head part is substantially triangular in cross section and has rounded vertices that engage with the building sheet.

A disadvantage of such prior art retaining elements is that movement of the building sheets over the retaining element, caused by e.g. thermal expansion or wind suction, generates unpleasant noise.

One proposed solution to the problem of noise is proposed in GB 2342933 A in which the head part of the retaining element is provided with a solid coating comprising an organic powder coating.

An object of the present invention is to provide an improved retaining element.

A further object of the present invention is to provide a retaining element that reduces the noise generated when building sheets slide over the head part of the retaining element.

One or both of these objects are obtained by a retaining element wherein the head part comprises one or more movable elements.

The movable elements allow the engageable building sheet to slide over the head part. The presence of movable elements in the head part significantly reduces the friction between the head part and the engageable building sheet enabling the building sheet to slide easily over the head part of the retaining element without generating significant noise. Wearing of the building sheet and the head part of the retaining element and resultant dust formation is also reduced. A further advantage is that reduced friction between the head part and the building sheet reduces the mechanical load on the join with a support structure. A high mechanical load on the retaining element is particularly undesirable where the support structure to which a retaining element is attached is less robust such as for example, insulating glass wool or foam glass. By reducing the mechanical loading to which the retaining element is subjected the present invention reduces the risk of the retaining element failing.

The movable elements are preferably rotatable to facilitate the sliding of a building sheet over the head part. The movable elements are preferably rotationally symmetrical and can freely and smoothly rotate reducing the chance of noise generation as a building sheet slides over the head part of the retaining element. The movable elements are most preferably spherical and can thus rotate in all orientations further reducing the chance of noise generation. The spherical movable elements preferably have a diameter of 1mm to 10mm to ensure they can be easily mounted on the head part and effectively facilitate the sliding of a building sheet over the head part of the retaining element.

The head part of the retaining element is preferably substantially triangular in cross section and preferably has a movable element positioned at one or more vertices of the triangle. The movable elements are therefore positioned on the head part at the points where a building sheet contacts the head part and are thus optimally positioned to reduce the friction between the head part and a building sheet sliding over the head part.

The movable elements are preferably made from metal, plastic or ceramic or a combination of these. Metal and ceramic are both hard and resistant to wearing offering good durability whilst plastic such as PTFE (polytetrafluoroethylene) is easily formable and resistant to temperature variations. The metal used is more preferably sinter metal e.g. sinter bronze for increased hardness and wear resistance.

The head part may comprise one or more mountings in which one or more movable elements are mounted. The mountings preferably extend in the direction of elongation of the retaining element. Of course the head part may comprise more than one mounting and each mounting may contain multiple movable elements. The mountings facilitate assembly of a retaining element, as the movable elements do not have to be individually mounted to the retaining element.

The retaining element preferably comprises a base part and a connecting flange connecting the base part and the head part wherein the head part, excluding the mountings and movable elements, the base part and connecting flange are made from metal which can be extrusion formed or a combination of metal and plastic which provides an insulating barrier between the interior of a roofing or cladding assembly and the building sheets e. g as known from EP 1236840 A1 (optionally incorporated herein by reference). The head part, excluding the mountings and movable elements, the base part and connecting flange are preferably formed from extruded aluminium.

The retaining element known from WO 98/53158 (optionally incorporated herein by reference) may be provided with a head part as proposed in the present invention.

A further aspect of the invention relates to an assembly for roofing a building or cladding e.g. the façade of a building comprising one or more elongate retaining elements as described above and having the advantages as set out above.

A further aspect of the invention relates to a mounting, in which movable elements are mountable, for use in the elongate retaining element according to the present invention.

The present invention is described further by way of example with reference to the accompanying schematic drawings in which:

Fig.1 shows a cross section perpendicular to the direction of elongation through a retaining element according to the invention.

Fig. 2 shows a side view of a retaining element according to the invention.

Fig. 3 shows a retaining element according to the invention engaging with building sheets

Fig. 4 shows a further retaining element according to the invention engaging with building sheets.

Fig. 1 shows a retaining element comprising a head part 1, a connecting flange 2 and a base part 3 where the connecting flange 2 connects the base part 3 to the head part 1. The head part 1 of the retaining element is preferably substantially triangular and preferably comprises mountings 5 into which movable elements 4 in the form of ball bearings are mounted. The movable elements could also be for example cylindrical or rugby-ball shaped. The movable elements may be made from metal, in particular sinter metal such as sinter bronze, plastic or ceramic. The mountings 5 may be attached by snap-fitting or may be fixed with adhesive or other fixing means. The mountings may be made of plastic which provides an insulation layer between the building sheets and the connecting flange and base parts of the retaining element and also resiliently retains the movable elements. The mountings may also be made from metal for durability. The head part of the retaining element, excluding the mountings and movable elements, the connecting flange and base parts of the retaining element are preferably made from metal or a combination of metal and plastic. The head part of the retaining element, excluding the mountings and movable elements, the connecting flange and base parts of the retaining element are preferably made from extruded aluminium.

Fig. 2 shows a side view of a retaining element according to the invention. The numbering is in accordance with figure 1 as described above. It can be seen that the mountings 5 in which the movable elements 4 are mounted preferably extend in the direction of elongation of the retaining element.

Fig. 3 shows a retaining element according to the invention and numbered in accordance with figure 1 as described above. The head part of the retaining element is substantially triangular in cross section. The retaining element is engaging with building sheets 6 and 7. Building sheets 6 and 7 have upstanding flanges 6a and 7a respectively, which end in curved portions 6b and 7b that curve around head portion 1 of the retaining element. The base part of the retaining element is mounted on a support structure 8 which can be for example a roof girder.

Fig. 4 shows a retaining element according to the invention and numbered in accordance with figures 1 and 3 as described above. The head part of the retaining element is substantially triangular in cross section and comprises cut away portions 10,11 adjacent the connecting flange 2 which form grooves extending along the direction of elongation of the retaining element. The retaining element is engaging with building sheets 6 and 7 which have upstanding flanges 6a and 7a respectively. The upstanding flanges end in curved portions 6b and 7b that curve around head portion 1 of the retaining element. The curved portions 6b and 7b of the building sheets can extend into the cut-away portions or grooves 10 and 11 which improve the engagement of the head part with the building sheets. The base part of the retaining element is mounted on a support structure 8 which can be for example a roof girder.

The retaining elements can of course also be mounted horizontally for example as part of a wall cladding or façade assembly for a building, or at other angles from the vertical.

CLAIMS

1. Elongate retaining element for building sheets, having as seen in cross section perpendicular to its direction of elongation, a head part for engaging at least one building sheet, characterised in that the head part comprises one or more movable elements.

2. Elongate retaining element according to claim 1, wherein the movable elements are rotatable.

3. Elongate retaining element according to claim 2, wherein the movable elements are rotationally symmetrical.

4. Elongate retaining element according to claim 3, wherein the movable elements are spherical.

5. Elongate retaining element according to claim 4, wherein the movable elements are of diameter in the range of 1mm to 10mm.

6. Elongate retaining element according to any one of the preceding claims 1 to 5 wherein the head part is substantially triangular in cross section and a movable element is positioned at one or more vertices of the triangle.

7. Elongate retaining element according to any one of the preceding claims 1 to 6 wherein the movable elements are made from metal, plastic or ceramic or combinations thereof.

8. Elongate retaining element according to any one of preceding claims 1 to 7, wherein the head part comprises one or more mountings in which the movable elements are mounted.

9. Elongate retaining element according to any one of preceding claims 1 to 8, wherein the retaining element comprises a base part and a connecting flange connecting the base part and the head part wherein the head part, excluding the mountings and movable elements, the base part and connecting flange are made from metal or a combination of metal and plastic.

10. Assembly for roofing a building or forming a building façade comprising one or more elongate retaining elements according to any one of the preceding claims.

11. Mounting, in which movable elements are mountable, for use in the elongate retaining element according to claim 8.

ABSTRACT

Elongate retaining element for building sheets, having as seen in cross section perpendicular to its direction of elongation, a head part for engaging at least one building sheet, wherein the head part comprises one or more movable elements.

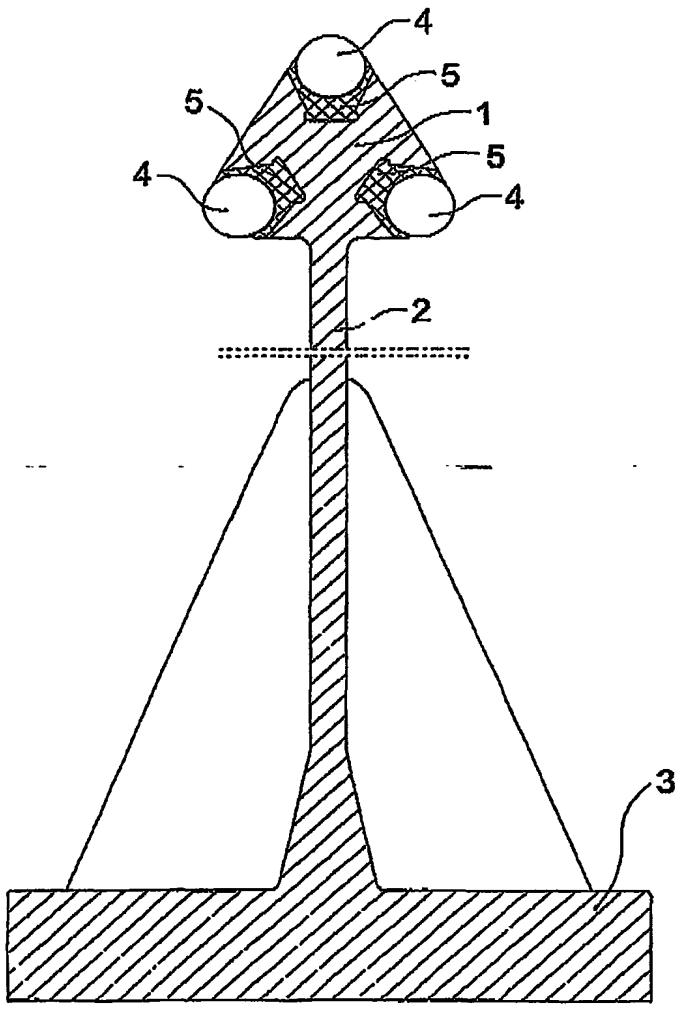

FIG. 1

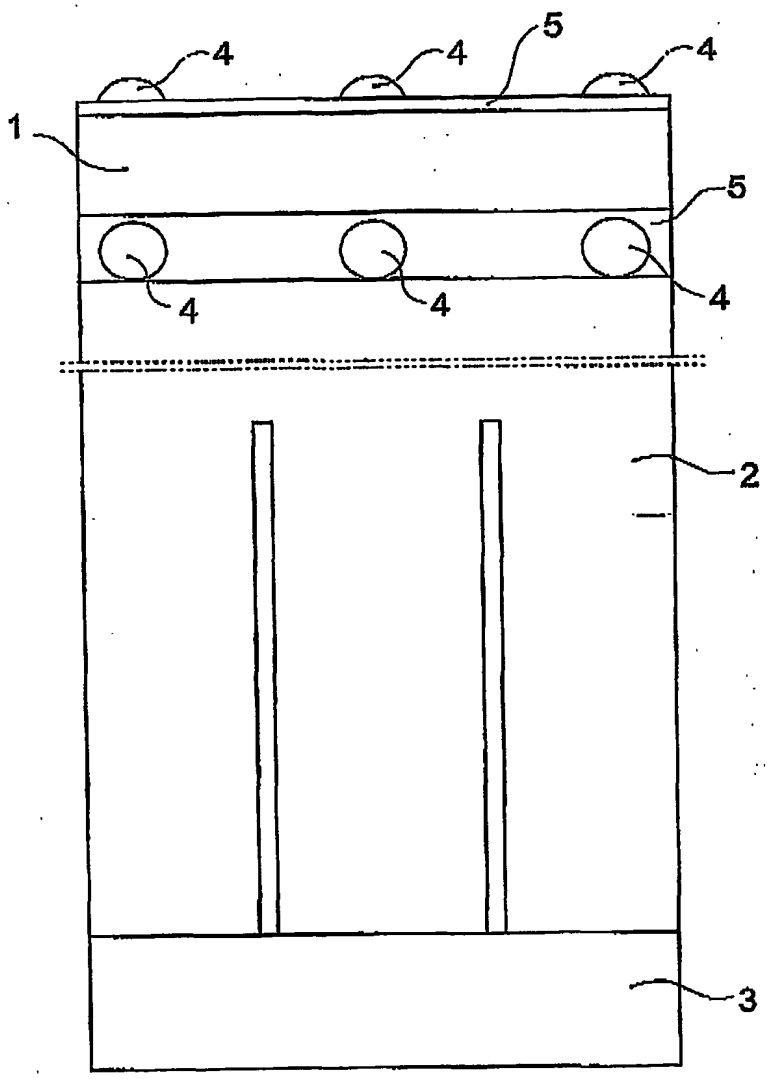

FIG. 2

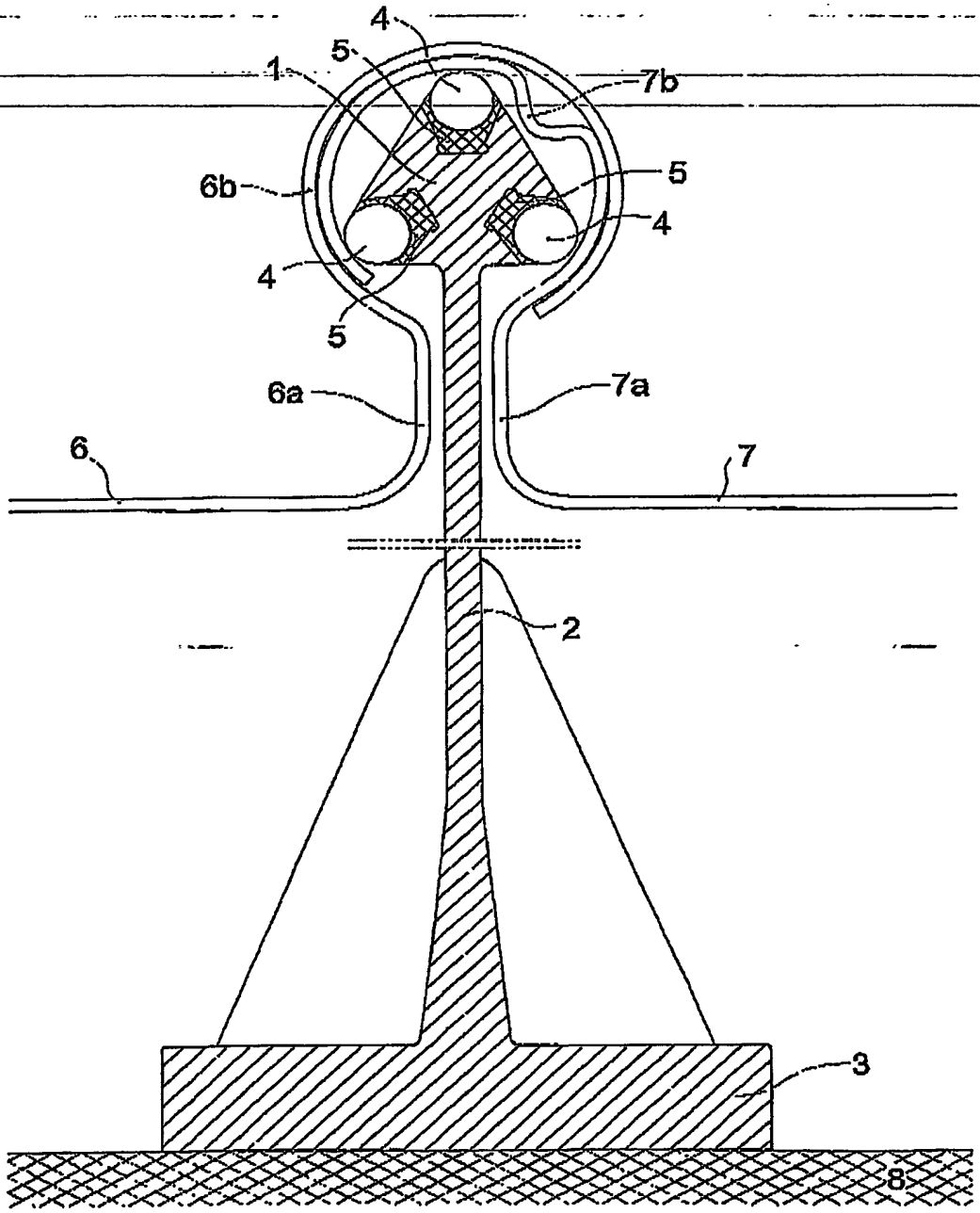

FIG. 3

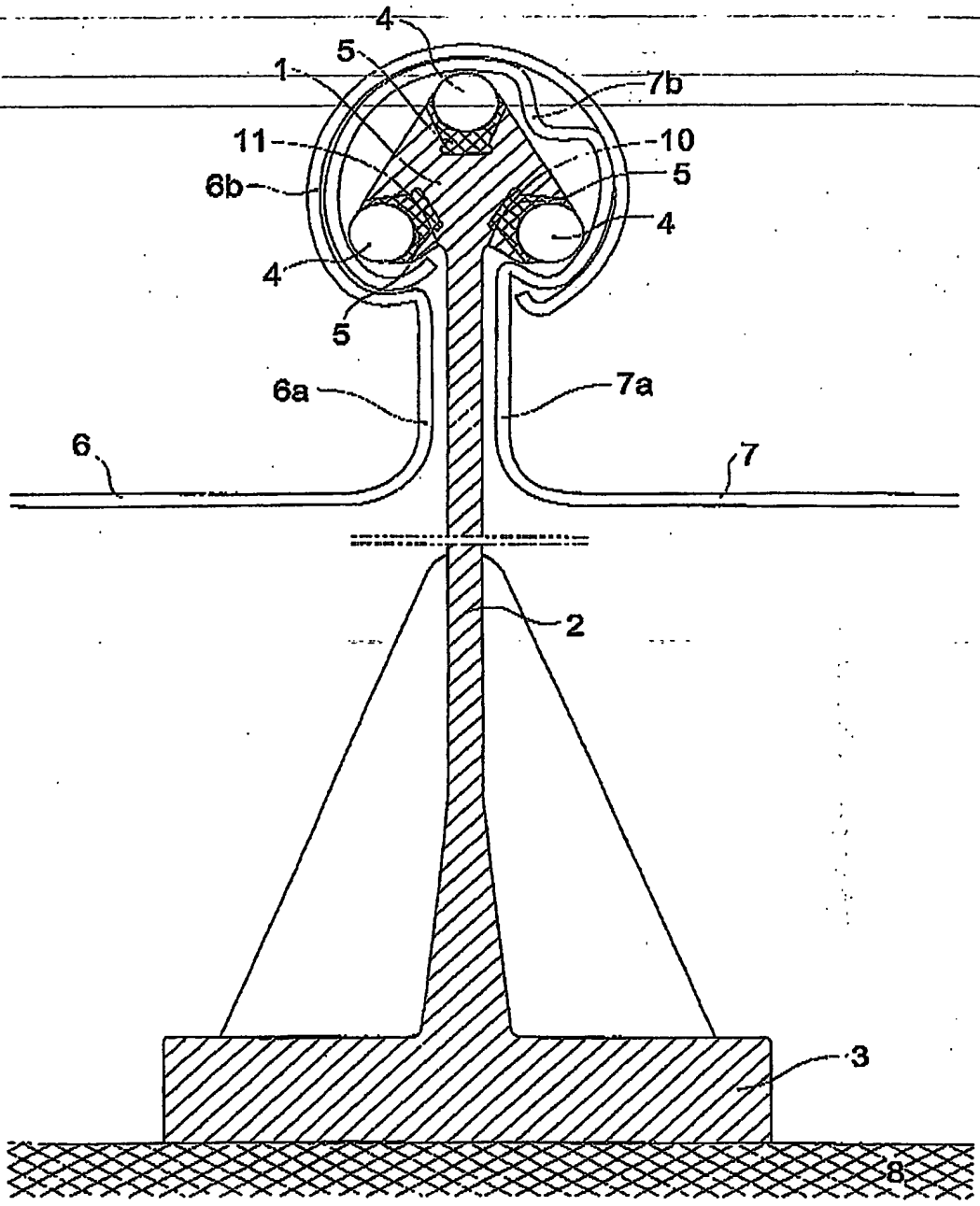

FIG. 4